Appl. No. 10/624851

In the Claims:

Listing of all claims:

1. (Currently Amended) A welding type power source capable of receiving a range of input voltages and frequencies, comprising:

an input circuit configured to receive an input power signal having an input frequency and an input magnitude and provide a first signal having a magnitude responsive to the input magnitude;

a preregulator configured to receive the first signal and provide a dc second signal having a preregulator magnitude independent of the input magnitude;

an output circuit configured to receive the dc second signal and provide a welding type output power signal having an output frequency independent of the input frequency and having an output voltage independent of the input voltage;

a preregulator controller, connected to the preregulator, and further having a controller power input; and

a control power circuit configured to receive the dc second signal and provide a control power signal to the controller power input, wherein the controller power signal has a control power magnitude independent of the input magnitude and a control frequency independent of the input frequency, and further wherein the control power circuit has a switch and start-up circuitry, wherein the start-up circuitry includes control circuitry.

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2. (Original) The apparatus of claim 1, wherein the input circuit includes a rectifier.

3. (Original) The apparatus of claim 1, wherein the preregulator magnitude is greater than the first magnitude.

4. (Original) The apparatus of claim 3, wherein the preregulator includes a boost converter.

5. (Original) The apparatus of claim 4, wherein the boost converter includes a slow voltage switched switch and a slow current switched switch.

6. (Original) The apparatus of claim 3, wherein the output circuit includes an inverter.

7. (Original) The apparatus of claim 3 wherein the output circuit includes a switched snubber.

8. (Original) The apparatus of claim 3, wherein the preregulator magnitude is greater than the control power magnitude.

9. (Original) The apparatus of claim 3 wherein the control power circuit includes a buck converter.

10. (Cancelled.)

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11. (Currently Amended) A method of providing welding type power from a range of input voltages and frequencies, comprising:

receiving an input power signal having an input frequency and an input magnitude;

providing a first signal having a magnitude responsive to the input magnitude;

converting the first signal into a dc second signal having a second magnitude independent of the input magnitude;

providing an output power signal derived from the dc second signal, wherein the output power signal is a welding type output and has an output frequency independent of the input frequency and further has an output voltage independent of the input voltage; ~~and~~

converting the dc second signal into control power, wherein the control power has a control power magnitude independent of the input magnitude, and wherein the control power is derived from a circuit that is controlled and receives power from a first set of circuit elements at start-up, and from a second set of circuit elements after start-up.

12. (Original) The method of claim 11, wherein providing a first signal includes rectifying an ac signal.

13. (Original) The method of claim 11, wherein the second magnitude is greater than the first magnitude.

14. (Original) The method of claim 13, wherein converting the first signal into a dc second signal includes boost converting the first signal.

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15. (Original) The method of claim 13, wherein boost converting the first signal includes a slow voltage switching and slow current switching a switch.

16. (Original) The method of claim 13, wherein providing an output power signal includes inverting the dc second signal.

17. (Original) The method of claim 13 wherein inverting the dc second signal includes switching a snubber.

18. (Original) The method of claim 13, wherein the second magnitude is greater than the control power magnitude.

19. (Original) The method of claim 13 wherein converting the dc second signal into control power includes buck converting the dc second signal.

20. (Currently Amended) A method of providing welding type power from a range of input voltages and frequencies, comprising:

rectifying an input power signal having an input frequency and an input magnitude to provide a rectified signal having a rectified magnitude responsive to the input magnitude;

boost converting, including slow voltage switching and slow current switching, the rectified signal to provide a boost dc signal having a boost magnitude greater than and independent of the rectified input magnitude;

inverting, including switching a snubber, the dc second signal to provide a welding type power output

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having an output frequency independent of the input frequency and having an output voltage independent of the rectified magnitude; and

buck converting the boost dc signal to provide a control power signal, wherein the control power signal has a control power magnitude less than and independent of the boost magnitude, and a control frequency independent of the input frequency, and providing power to a buck convertor from a first set of circuit elements at start-up, and from a second set of circuit elements after start-up.

21. (Currently Amended) A welding type power source capable of receiving a range of input voltages and frequencies, comprising:

input means for receiving an input power signal having an input frequency and an input magnitude and for providing a first signal having a magnitude responsive to the input magnitude;

converting means for converting the first signal into a dc second signal having a magnitude independent of the input magnitude, wherein the converting means is connected to receive the first signal;

means for providing a welding type output power signal derived from the dc second signal, wherein the output power signal and has an output frequency independent of the input frequency and further has an output voltage independent of the input voltage, and wherein the means for providing an output power signal is disposed to receive the dc second signal;

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means for converting the dc second signal into control power, wherein the control power has a control power magnitude independent of the input magnitude; and

means for providing power to a circuit that provides the control power from a first set of circuit elements at start-up, and from a second set of circuit elements after start-up.

22. (Original) The apparatus of claim 21, wherein the first means includes means for rectifying an ac signal.

23. (Original) The apparatus of claim 22, wherein the convertor magnitude is greater than the first magnitude.

24. (Original) The apparatus of claim 23, wherein the converting means includes means for boost converting the first signal.

25. (Original) The apparatus of claim 24, wherein the means for boost converting includes means for slow voltage switching and slow current switching a switch.

26. (Original) The apparatus of claim 25, wherein the means for providing an output power signal includes means for inverting the dc second signal.

27. (Original) The apparatus of claim 26 wherein the means for inverting includes means for switching a snubber.

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28. (Original) The apparatus of claim 27, wherein the converter magnitude is greater than the control power magnitude.

29. (Original) The apparatus of claim 28 wherein the means for converting the dc second signal into control power includes means for buck converting the dc second signal.

30. (Currently Amended) A welding type power source capable of receiving a range of input voltages and frequencies, comprising:

a dc bus;

an output circuit configured, having a control input and to receive the dc bus and provide a welding type output power signal having an output frequency independent of the input frequency and having an output voltage independent of the input voltage;

a controller, connected to the control input and further having a controller power input; and

a control power circuit configured to receive the dc bus and provide a control power signal to the controller power input, wherein the control power circuit is further configured to receive power from a first set of circuit elements at start-up and a second set of circuit elements after start-up.

31. (Original) The apparatus of claim 30, wherein the output circuit includes an inverter.

32. (Original) The apparatus of claim 31, wherein the output circuit includes a switched snubber.

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33. (Original) The apparatus of claim 30, wherein the dc bus has a magnitude is greater than a magnitude of the control power signal.

34. (Original) The apparatus of claim 30 wherein the control power circuit includes a buck converter.

35. (Currently Amended) A method of providing welding type power from a range of input voltages and frequencies, comprising:

receiving a dc bus having a dc magnitude;

providing an output power signal derived from the dc bus, wherein the output power signal is a welding type output; and

converting the dc bus into control power, wherein the control power has a control power magnitude independent of the dc magnitude, and wherein the control power is derived from a first set of circuit elements at start up and from a second set of circuit elements after start-up; and

providing the control power to a controller configured to control the output power.

36. (Currently Amended) A method of starting to provide welding type power from a range of input voltages and frequencies, comprising:

receiving an input power signal having an input frequency and an input magnitude;

providing a first dc signal having a first dc magnitude responsive to the input magnitude;

deriving a second dc voltage having a second dc magnitude less than the first dc magnitude

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controlling a control converter with the second dc voltage to produce a control dc voltage[;] from a first set of circuit elements at start up and from a second set of circuit elements after start-up; and

controlling an output converter with the control dc voltage to produce an output signal.